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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,963	07/15/2003	Werner Gruenwald	10191/3273	9702

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EXAMINER

OLSEN, KAJ K

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 12/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/620,963

Applicant(s)

GRUENWALD, WERNER

Examiner

Kaj K. Olsen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 7-15-2003;12-20-2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

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DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Germany on 7/17/2002. It is noted, however, that applicant has not filed a certified copy of the German application as required by 35 U.S.C. 119(b).

Drawings

2. The examiner requests the applicant provide new copies of the drawings. The drawings on file with the USPTO are fuzzy and appear to be a poor photocopy. Because all the other scanned images of the applicant's submitted documents do not suffer from this problem, the examiner presumes the problem was did not originate with the scanning procedure of the office, but rather with the applicant's source drawings.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. In claim 1, specifying that the first and second pair of electrodes are "situated on the" first and second pump cells respectively is confusing. The first and second pair of electrodes are a part of the first and second pump cells and are not "situated" per se on the first and second pump cells. The claims should be amended appropriately. Alternately, applicant could amend

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the claim to state that the first and second pair of electrodes are situated on the electrolyte, which would also be correct.

6. It is unclear what claim 8 is attempting to specify. What does it mean to state that the cross section of the cavity is a multiple of the cross section of an opening? This limitation does not appear to have been further elaborated in the specification.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1 and 6 are rejected under 35 U.S.C. 102(b) or (e) as being anticipated by Miyashita et al (USP 6,589,409). Miyashita was also published earlier as US 2001/00257789

A1.

9. Miyashita discloses an electrochemical sensor for measuring nitrogen oxides comprising a first pump cell 2 having a solid electrolyte 65 with a first pair of electrodes (21, 22) which are connected to a first pump voltage 252 with a first electrode 21 configured to be acted on by a gas via a diffusion path 61. Miyashita further discloses a second pump cell 3 situated downstream from the first pump cell having a solid electrolyte 65 with a second pair of electrodes (31, 32), which are connected to a second pump voltage 352 with a first electrode 31 being configured to

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be exposed to a gas volume leaving the first pump cell and a second electrode 32 configured to be exposed to a reference gas 14. Miyashita further discloses that the second electrode 22 of the first pair is also configured to be exposed to the reference gas. See fig. 10, col. 7, l. 25 through col. 8, l. 31, and col. 12, ll. 19-30.

10. With respect to the first electrode of the first pump cell being catalytically inactive, see col. 8, ll. 9-12.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 2-5 and 7-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyashita in view of Tanaka et al (USP 6,205,843).

13. Miyashita set forth all the limitations of claim 2 and further disclosed that the first electrode 21 of the first pump cell would be situated in a first inner chamber 11 and first electrode 31 of the second pump cell would be situated in a second inner chamber 12. See fig. 10 and col. 6, l. 64 through col. 7, l. 7. However, Miyashita does not explicitly disclose the presence of a diffusion path in the first inner chamber. Diffusion in Miyashita is controlled by passage 110. Tanaka teaches that the use of pinholes like the passage 110 of Miyashita has the disadvantage of being temperature dependent thereby causing inaccuracies. See col. 2, ll. 47-59. Tanaka instead suggests controlling the gas diffusion to the pump cells of the NOx sensor using a

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gas diffusion member inside the inner chambers of the NO_x sensor. See fig. 10 and col. 19, ll.

40-58. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Tanaka for the sensor of Miyashita in order to arrive at a gas diffusion control that is more accurate and less temperature dependent.

14. With respect to the specified cavity, the space between the first and second pair of electrodes on either Miyashita or Tanaka would read on the defined cavity giving the claim language its broadest reasonable interpretation. With respect to the cross section of the cavity being a multiple of the cross section of the opening, the examiner does not understand this limitation (see the 112 rejection above). Moreover, because applicant doesn't define any value or range of this multiple, any cross section of the cavity would inherently be a multiple of any cross section of an opening.

15. Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyashita in view of GB 2,288,873 A (hereafter "GB '873").

16. Miyashita set forth all the limitations of the claim 13 and further discloses that the voltage being applied to the first pump cell should avoid decomposition of nitrogen oxides. See col. 8, ll. 10-20. Miyashita does not explicitly disclose that the voltage being applied to either the first and second pump cells are direct-current voltage (although they presumably are as is standard for these NO_x sensors) nor does Miyashita explicitly define that the voltage applied to the second pump cell is higher than the voltage applied to the first pump cell. GB '873 establishes both of these features in an alternate NO_x sensor. In particular, GB '873 establishes that direct current is to be applied to both the first pump and second pump cells and that the voltage applied to first pump cell should be less than the voltage applied to the second pump cell

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to ensure that NO_x is not decomposed by the first pump cell. See p. 4, ll. 2-11. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of GB '873 for the sensor of Miyashita so as to ensure that only oxygen is consumed at the first pumping cell.

17. Miyashita further teaches adjusting the voltage applied based on the change in oxygen concentration of the gas (i.e. the voltage applied varies with the measured pump current). See col. 8, ll. 14-21.

18. With respect to claims 15 and 16, these claims are merely defining how the device is to be utilized. Intended use of the apparatus need not be given further due consideration in determining patentability of the apparatus.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaj Olsen whose telephone number is (571) 272-1344. The examiner can normally be reached on Monday through Friday from 8:00 A.M. to 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen, can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

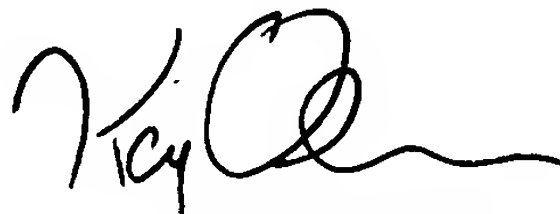
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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November 30, 2006

A handwritten signature in black ink, appearing to read 'Kaj K. Olsen', with a stylized flourish at the end.

**KAJ K. OLSEN
PRIMARY EXAMINER**